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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/723,054

11/25/2003

Carol Jeffcoate

HO2-0002

7777

7590

10/10/2006

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EXAMINER

CHUO, TONY SHENG HSIANG

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/723,054

Applicant(s)

JEFFCOATE, CAROL

Examiner

Tony Chuo

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 12-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. Claims 12-25 are currently pending. As per the applicant's request, claims 1-11 have been cancelled because the restriction requirement is maintained. The objection to the drawings is withdrawn. The objection to the specification is withdrawn. The objections to claims 19-25 are withdrawn. The amended claims 12 and 18 do overcome the previously stated 102 rejection. However, upon further consideration, claims 12-25 are currently rejected under the following 112 and 103 rejections. This action is made FINAL as necessitated by the amendment.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 12-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claims 12 and 18, the limitation "a direction of heat transfer of the thermoelectric layer is parallel to a surface area of the thermoelectric layer, the surface area being greater than a width of the thermoelectric

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layer” is not supported in the specification. Claims depending from claims rejected under 35 USC 112, 1<sup>st</sup> paragraph are also rejected for the same.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 12-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 12 and 18, it is unclear how the surface area of the thermoelectric layer is greater than a width of the thermoelectric layer. Claims depending from claims rejected under 35 USC 112, 2<sup>nd</sup> paragraph are also rejected for the same.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 12-13, 15-20, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enjoji et al (US 2004/0101728) in view of Cagnelli et al (US 5753383). The Enjoji reference teaches a method for controlling the temperature of the fuel cell stack comprising electric heaters “52a” through “52d” disposed within the fuel cell assembly and associated with fuel cells “14a” through “14d” wherein electrical energy generated in the fuel cell is selectively supplied to the electric heaters; and a

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radiator (heat sink) "108" in thermal contact with a periphery of the fuel cell stack (See Figures 1 and 11). It also teaches a fuel cell assembly that is a solid polymer electrolyte fuel cell which is a proton exchange membrane fuel cell (See paragraph [0004]). It also teaches heating fuel cells 14a through 14e to a predetermined temperature and controlling each fuel cell at that temperature in order to maintain uniform temperature across the fuel cell stack (See paragraph [0052],[0053],[0054]). It also teaches measuring the temperature of the fuel cell stack at predetermined positions selected from the fuel cells (See paragraph [0068]). Examiner's note: It is implicit from the teachings of Enjoji et al that a temperature sensor is associated with each electric heater and is connected via control circuitry in order to determine whether the temperature of each fuel cell has reached the power generating temperature and to maintain the fuel cells at that power generating temperature. However, the reference does not expressly teach adjusting the voltage of the power source in response to the measured temperatures to heat or cool the temperature at the one or more locations of the fuel cell stack wherein the thermoelectric devices are Peltier devices. The Cargnelli reference teaches electrically connecting thermoelectric elements that are Peltier modules to the fuel cell stack so that the fuel cells' current can be applied to the Peltier modules to create a temperature gradient or differential across the element and reversing the direction of the current fed from the fuel cells to the thermoelectric element to heat or cool the surfaces of the fuel cell (See column 4, lines 47-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Enjoji method of controlling the temperature of the fuel cell stack to

include the step of adjusting the voltage of the power source in response to the measured temperatures to heat or cool the temperature at the one or more locations of the fuel cell stack wherein the thermoelectric devices are Peltier devices in order to simplify the fuel cell system by using a device that can both heat and cool the fuel cell without an external cooling system.

8. Claims 14 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enjoji et al (US 2004/0101728) in view of Cargnelli et al (US 5753383) as applied to claims 12 and 18 above, and further in view of Doke (US 5576512). However, the reference does not expressly teach a power source that is a battery. The Doke reference teaches thermoelectric systems where the power source is a battery (See column 2, lines 30-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Enjoji/Cargnelli method of controlling the temperature of the fuel cell stack to include a power source that is a battery in order to be able to heat the fuel cells during start-up without using electrical energy generated by the fuel cells.

9. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Enjoji et al (US 2004/0101728) in view of Cargnelli et al (US 5753383) as applied to claim 18 above and further in view of Walsh (US 2003/0044662). However, the reference does not expressly teach temperature sensing devices that are thermocouples. The Walsh reference does teach a thermocouple coupled to a control circuit for regulating the temperature of the fuel cell (See paragraph [0026]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify

the Enjoji/Cargnelli method of controlling the temperature of the fuel cell stack to include thermocouples associated with each thermoelectric device so that temperature of the fuel cell can be more reliably measured.

### ***Response to Arguments***

10. Applicant's arguments with respect to claims 12-25 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's election with traverse of Group II, claim 12-25 in the reply filed on 8/14/06 is acknowledged. The traversal is on the ground(s) that searching the subject matter of groups I and II does not place a serious burden on the examiner and the groups are related. This is not found persuasive because these inventions are independent and distinct and would require different field of search because a thermoelectric device does not have to both heat and cool. The requirement is still deemed proper and is therefore made FINAL.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy Tsang-Foster can be reached on (571) 272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

  
SUSY TSANG-FOSTER  
PRIMARY EXAMINER